

Operating instructions

Two-way / three-way valves for drinking water plants

BR216RA-TW DN 15 - DN 50

BR316RA-TW DN 15 - DN 50

General information

Amendment	Version	Date	Changes
	1.0	July 2004	Initial preparation
	2.0	December 2010	Complete revision and supplements
	2.1	March 2011	Revision

Authorization The copyright for this operating manual as well as all rights in case of patent awarding or registration of registered design remain with the manufacturer!

Subject to alterations The regulations, directives, standards etc. are compliant with the current state of information at the time of development and are not subject to modification service. They must be applied by the operator at his own responsibility in their latest valid version.

Concerning all data, information, and illustrations in this manual we reserve the right of technical modifications and improvements. No claims can be considered for alteration or rework of already delivered fittings.

Manufacturer **HORA**
 Geschäftsbereich Flow Control
 Holter Regelarmaturen GmbH & Co. KG
 Helleforthstrasse 58–60
 33758 Schloss Holte-Stukenbrock
 Germany

phone: +49 (0) 5207/8903-0

mail: fc@hora.de

www.hora.de

Content

1 Safety	4	4 Assembly.....	11
1.1 Proper use	4	4.1 Checking the scope of delivery	11
1.2 For the owner-operator	4	4.2 Preparing assembly	11
1.3 Personnel.....	5	4.3 Installation of the fitting	12
1.4 Prior to work.....	5		
1.5 Work environment.....	5	5 Commissioning.....	12
2 Product Specification	6	6 Maintenance, care and repairs	13
2.1 Two-way valve	6	7 Spare parts.....	13
2.2 Three-way valve	7	8 Decommissioning and disposal.....	13
2.3 Identification of fitting	8	9 Replacing stem seal	14
2.4 Limits for application	8		
2.5 Technical data	9	10 How to remedy faults	15
2.6 Type plate	10	10.1 Check list for breakdown.....	15
3 Transport, storage and handling	10		

1 Safety

Please carefully read this operating manual and in particular the following safety notes prior to installation and operation.



DANGER

Immediately threatening risk which will result in death or serious injuries of the body.



WARNING

Potentially dangerous situation which might result in death or serious injuries of the body.



CAUTION

Potentially dangerous situation which might result in minor injury of the body. Indicates a risk which may be result in property damage.



ATTENTION

Potentially dangerous situation where the product or an object may be damaged in its environment.

Hint: Notes for application and other useful information.

1.1 Proper use

The delivery note is a part of the operating instructions. If not at hand, it must be requested prior to commissioning the fitting and then compared with the characteristic values of the system. Deviations from system and delivery note values must be cleared with the manufacturer prior to commissioning.

The fitting is designed for use within the pressure and temperature limits specified on the delivery slip.

Any other utilization for tasks diverting from the intended use stated above as well as any operation outside the allowable pressure and temperature ranges shall be deemed non-intended use. The owner-operator bears sole responsibility for risks to humans and machinery as well as any other property!

1.2 For the owner-operator

Keep the operating manual always within reach at the place of operation of the fitting!

The intended use also includes the compliance with accident preventions, EN regulations and safe working practices for all measures described in these operating instructions in due consideration of prevailing rules.

Follow the additional regional, local or internal safety regulations, if any.

Make sure that any person entrusted to carry out one of the actions described in this operating manual has read and understood this manual.

For attachment, operation and maintenance of the valves / linear actuators, the regulations of the drinking water directive 2001 as well as the respectively valid regulations pertaining to maintenance of industrial health and safety, accident

prevention as well as the DIN VDE regulations must be observed at the operator's own responsibility.

1.3 Personnel

Only qualified personnel shall work at or near these fittings. Qualified persons are deemed persons who are familiar with the installation, erection, start-up and operation and/or maintenance of the fittings or have been qualified appropriately for their work. The necessary and prescribed qualifications include:

- Training / instruction or authorization to turn on /off circuits and appliances / systems according to EN 60204 (DIN VDE 0100 / 0113) and the standards of safety technology.
- Training or instruction according to the standards of the safety technology concerning care and use of adequate safety and work protection equipment.
- First Aid training.

Work safely and refrain from any mode of working which might in any way endanger the safety of persons or the fitting and/or other assets.

1.4 Prior to work

Check, whether the nominal / functional data on the type plate match the operating data of the system.

Prior to the start of maintenance and / or repair work all electrical leads leading to the fitting actuator, if existing, must be disconnected from the mains by qualified personnel according to EU Guidelines. In addition the fitting must be depressurised, cooled down and empty.



During operation the fitting may be under pressure and temperature.

When the fitting is not depressurised and cooled down there is a risk of damage to property and severe bodily injuries.

- Ensure that fitting is depressurised, cooled down and empty.
-

1.5 Work environment

The ambient temperature (atmospheric temperature, air humidity and wetness) must not exceed or drop below the common values.

2 Product Specification

Fittings of the lines of products described in this document are used for controlling drinking water. The fitting consists of the valve and the drive which alters the position of the flow restrictor (cone) in relation to the seat as a function of the control input.

Suitable drives include electrical linear actuators which act by an axial shift of the cone.

2.1 Two-way valve

- Flow from A to B

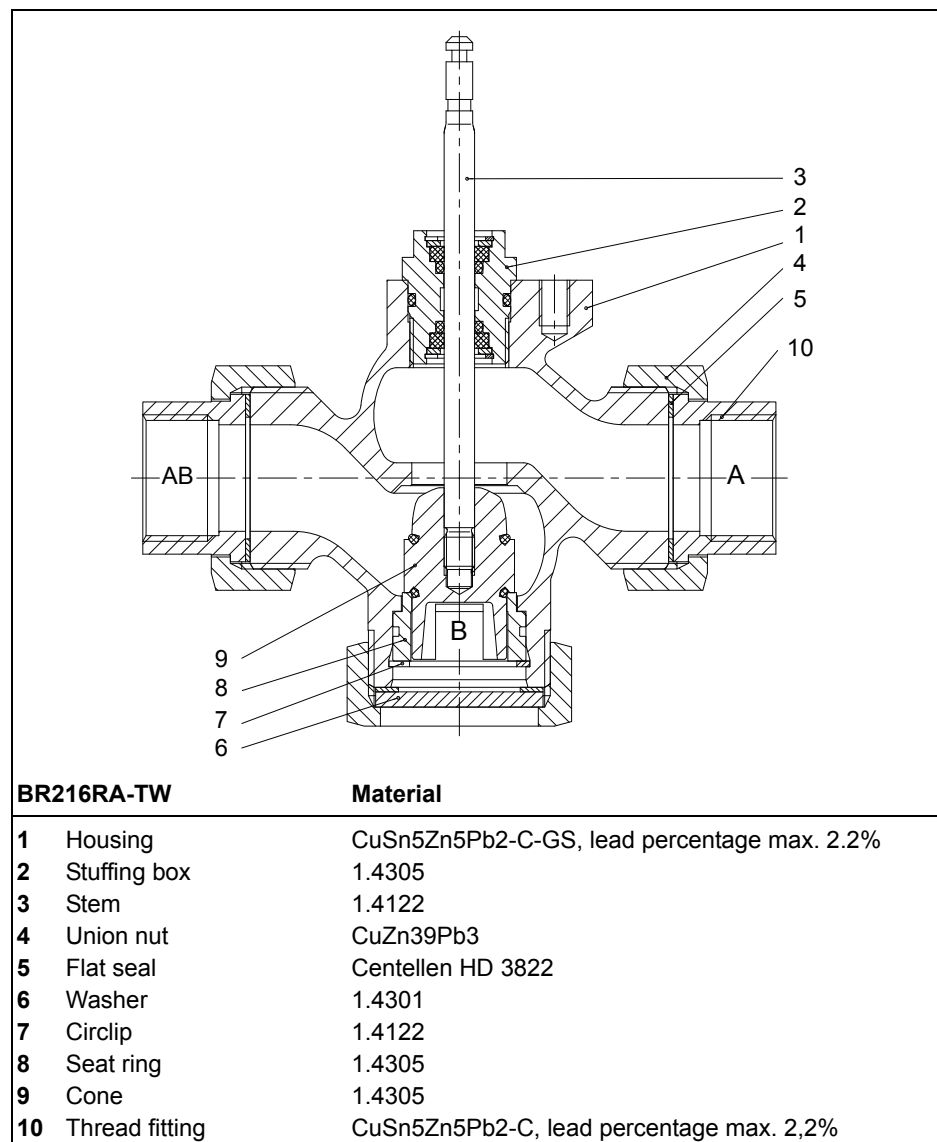


Fig. 1 Component part denominations

2.2 Three-way valve

- Mixing valve: Flow from A to AB and B to AB
- Reversing valve: Flow from AB to A and AB to B, not suitable for use as dispensing valve

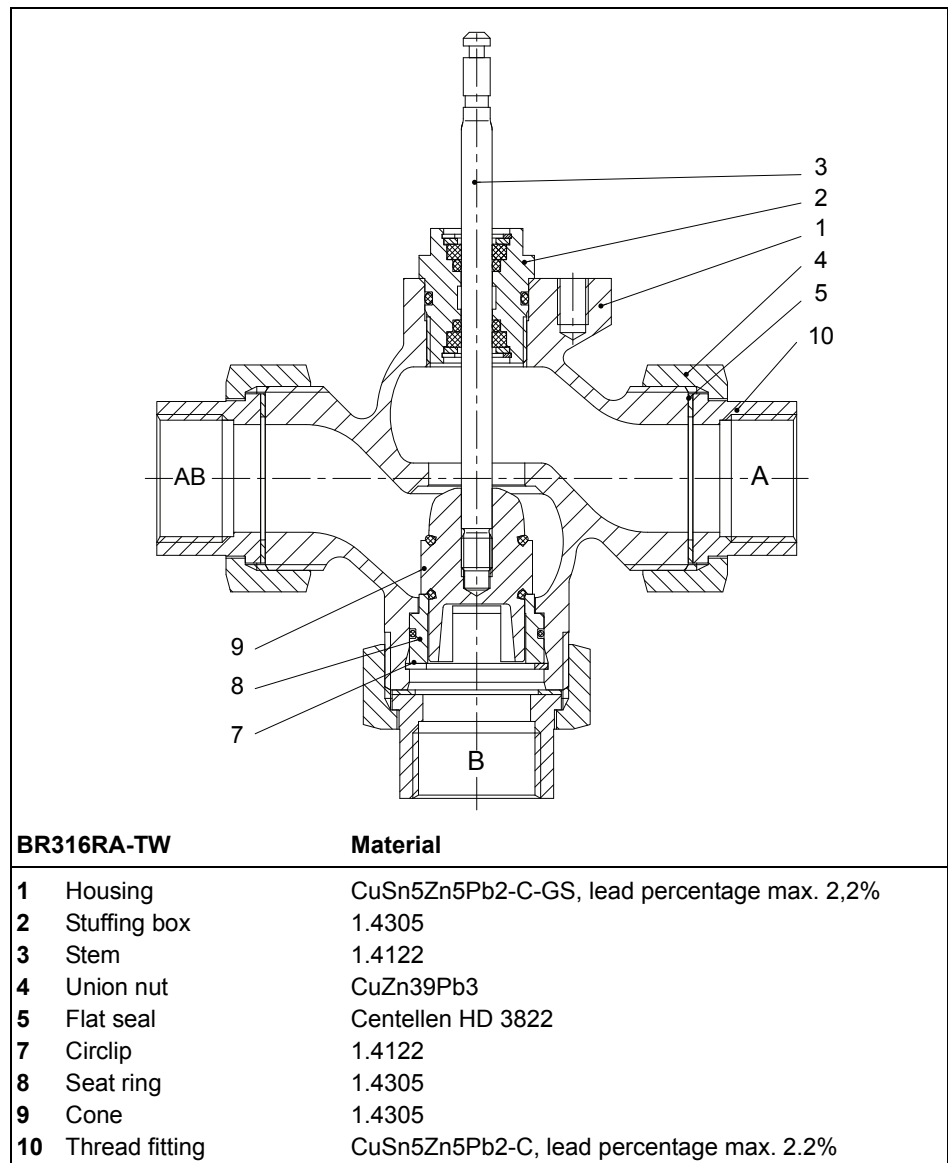


Fig. 2 Component part denominations

2.3 Identification of fitting

The housing or type plate of the fitting bears the following identifications:

- Nominal width DN
- Nominal pressure PN
- Admissible maximum temperature TS
- Material of housing
- Name of manufacturer

2.4 Limits for application

The fittings are state-of-the-art and operative for the intended use as well as operation within the data stated on the type plate.



Operability can be impaired posing a danger of personal damage or damage to property.

Ensure that

- the assembly, setting and / or commissioning is carried out properly according to the guidelines in these operating instructions.
 - the operating data are within the values stated on the type plate and/or on the delivery note.
 - ambient conditions (atmospheric temperature, air humidity and wetness) do not exceed or drop below common values.
-

2.5 Technical data

Production series	BR216RA-TW	BR316RA-TW
Form	Two-way	Three-way
Nominal width	DN 15 + DN 20 DN 25 - DN 50	DN 15 + DN 20 DN 25 - DN 50
Pressure stage	PN 16	PN 16
Characteristic curve	A-->AB gl% mod.	A-->AB gl% mod. B-->AB linear
Stroke	12 mm 14 mm	12 mm 14 mm
Stem sealing	O-ring made of EPDM	O-ring made of EPDM
Function	Two-way valve	Mixing valve or change-over valve
Type of connection	Male thread as per ISO 228/1 incl. Connection pieces of red brass with cylindrical female thread acc. to ISO 7/1, coupling nuts and flat seals	
Leakage rate	EN 1349 – Seat leakage VI G 1 (tight fitting)	
Fluid temperature	Valve for refeeding cold water to the drinking-water-heater and for circulation in the warm water area 0...+90°	
Dimensions	See technical data sheets	
Operative range	Drinking water piping in estates and buildings as per DIN 3546, part 1	
Base of inspection	DIN 3266, E-DIN 3433, ISO 7-1, DIN 1988 as well as resolution of the W-TK 3.2	

table 1 Technical data

2.6 Type plate



Fig. 3 Type plates for fittings

Type	Series designation of fitting
Kvs	Kv _S -Value in m ³ /h
TS	Admissible maximum temperature
Date	Date of manufacture

table 2 Meaning of inscription

3 Transport, storage and handling



CAUTION

Non-compliance with safety regulations may result in injury!

- Wear the required personal and other safety equipment.
- Protect the fitting against external damage (impact, stroke, vibrations etc.) especially in the area around the valve spindle
- Repair any damage to the anticorrosive immediately (paintwork, oiled surfaces etc.).
- Wait until arriving at the site of installation before removing the sealing plugs serving as a protection for the flanges and interiors of the fitting!

4 Assembly

Prior to assembling the fitting:

- ⇒ 4.1 *Checking the scope of delivery* on page 11
- ⇒ 4.2 *Preparing assembly* on page 11

The assembly of the fitting comprises the following steps:

- ⇒ 4.3 *Installation of the fitting* on page 12

4.1 Checking the scope of delivery

- Check the packaging for damage.
- Dispose of packaging in an environmentally friendly manner.
- Check the delivered items against the delivery note in order to see whether the delivery is complete.
- Report any missing or damaged products to the manufacturer.

4.2 Preparing assembly

- To remove scale, welding residue and other impurities inside the duct system, disinfect and rinse the system prior to trial operation.
- During the rinsing cycle replace the fitting with an adaptor.
- Install a dirt trap or filter upstream of the valve.
- Prior to installing the fitting check whether the pipeline guide is constructed in such a way that mechanical stresses (such as forces and moments originating from pipeline expansion during operation, vibrations etc.) do not affect the valve housing during installation and operation. Arrange for possible compensators.



Smoothing section upstream and downstream of fitting

A linear pipeline section of a length of 10 x DN, upstream and downstream of the fitting increases the control behaviour of the fitting.

- Non-observance may result in undefined flows.

Hint: To enable assembly work on the fitting during operation we recommend sealed locking fittings and a bypass at an appropriate distance upstream and downstream from the fitting. The turned off duct stretch must be ready for draining.

4.3 Installation of the fitting

- 1 Linear actuator and valve must match if functional disturbances are to be avoided. Select a suitable combination of linear actuator and valve.
- 2 Determine the installation position of the linear actuator. Do not arrange linear actuators in a hanging position.
- 3 For a slanted or horizontal installation position of the valve install the drive in such a way that the position of the columns generates a maximum section modulus.
⇒ Fig. 4 Installation positions of linear actuator and valve on page 12
- 4 Pay attention to the flow symbol on the valve body. A reversed direction of flow has a detrimental effect on the control behaviour!
⇒ Fig. 1 Component part denominations on page 6
⇒ Fig. 2 Component part denominations on page 7
- 5 Connect the pipelines stress-free without angle, central or longitudinal offset.
- 6 For flange fitting use only suitable seals, screws and nuts (not included in delivery).
- 7 Use only system components, sealings and lubricants which are admitted for drinking water.
- 8 Fit insulation to fittings operated at high temperatures ($> 50^{\circ}\text{C}$) or low temperatures ($< 0^{\circ}\text{C}$) for protection against touching by fitting insulation material.

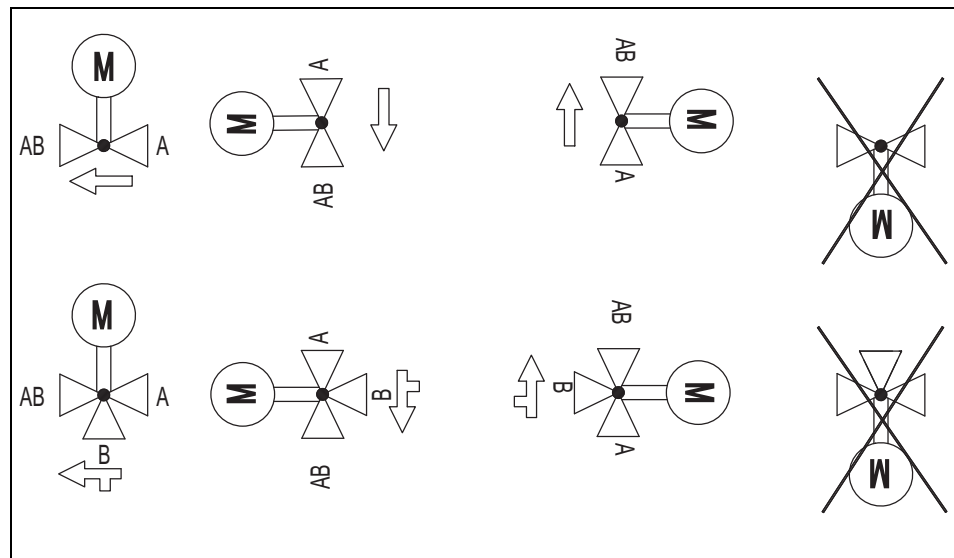


Fig. 4 Installation positions of linear actuator and valve

5 Commissioning



WARNING

Prior to commissioning a new system and after alterations and repairs ensure

- that all installation / assembly work has been properly completed!
- that the fitting is functioning without posing a danger to persons, appliances or the system!
- Follow the operating instructions!

**Risk of injury during operation**

Due to risk of injury, the handling of objects between the valve and the actuating drive during operation is prohibited!

Hint: During commissioning run the stroke several times through the operating cycle (whilst flow of substance flows through fitting).

6 Maintenance, care and repairs

This is a low maintenance fitting. You do not have to carry out continuous or periodical maintenance.

7 Spare parts

When ordering accessories and spare parts please quote the specifications engraved on the type plate of your fitting.

**Risk of personal injury and damage to property due to the use of faulty spare parts!**

Spare parts must match the technical data specified by the manufacturer.

- Use genuine spare parts at all times.

⇒ Fig. 1 Component part denominations on page 6

⇒ Fig. 2 Component part denominations on page 7

8 Decommissioning and disposal

Dispose of the fitting according to national regulations and laws.

9 Replacing stem seal



During operation the fitting may be under pressure and temperature.

If the fittings are not depressurized and cooled down, there is a risk of material damage and severe bodily injuries.

- Ensure that fitting is depressurised, cooled down and empty.



Prior to carrying out any work pay attention to the following:

- Depressurize the linear actuator. Please refer to the operating instructions for the linear actuator.

■ How to shut down the system

- 1 Lock the duct on either side of the valve (push inlet and outlet into duct section).
- 2 Depressurise the cable section.
- 3 Allow the valve to cool down to about room temperature.
- 4 Refer to safety data sheet (EC guideline 91 / 155 EEC) for information about the line content when dealing with hazardous (chemicals directive) media or those hazardous to groundwater (water supply directive) media. Comply with personal safety equipment as prescribed in the data sheet.
- 5 Empty and dispose of the line content as per EC guideline 75 / 442 / EEC.

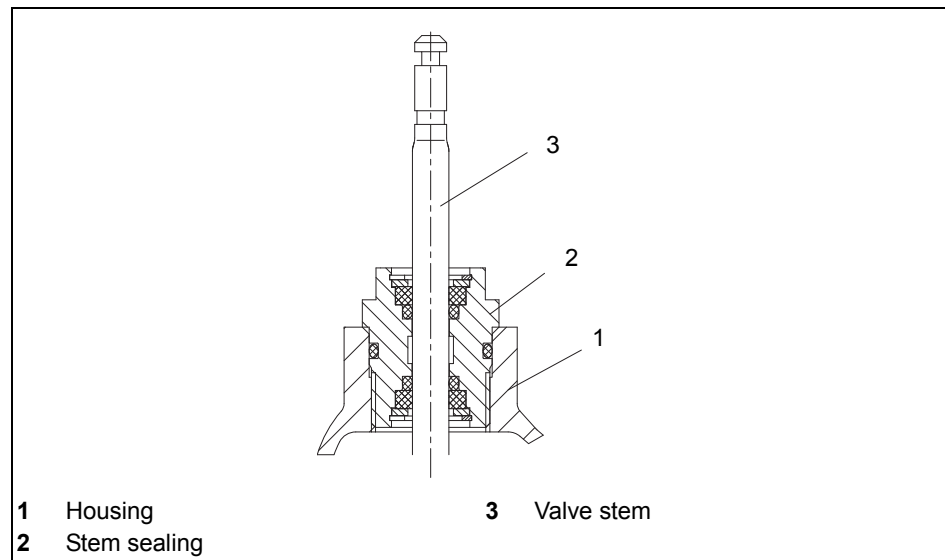


Fig. 5 Stem sealing

■ Replacing the stem seal

- 1 Unscrew the stem seal (2) spanner width 24 and remove it from the valve stem (3).
- 2 Check the valve stem (3) for deposits and damage.
- 3 Try to remove possible deposits with a smooth polishing cloth.
- 4 If the valve stem is damaged consult the manufacturer.
- 5 If the valve stem (18) is in proper working order, assemble the new stem seal (21).

Hint: Avoid damage to the O-ring seal from the stem thread

- 6 Screw fast the new stem seal (21).

10 How to remedy faults



During operation the fitting may be under pressure and temperature.

If the fittings are not depressurized and cooled down, there is a risk of material damage and severe bodily injuries.

- Ensure that fitting is depressurised, cooled down and empty.



Prior to carrying out any work pay attention to the following:

- Disconnect the linear actuator from the power supply. Please refer to the operating instructions for the linear actuator.

⇒ ■ *How to shut down the system* on page 14

10.1 Check list for breakdown

Fault	Cause/reason	Rectification
1. Stem is not moving	Interior mounting jammed.	<input type="checkbox"/> Dismantle fitting and send in or ask for customer service.
	Drive not working	<input type="checkbox"/> See operating instruction for drive
2. Stem is showing jerky movements	Stem is soiled	<input type="checkbox"/> Clean stem using suitable detergent
	Stem is damaged	<input type="checkbox"/> Dismantle fitting and send in or ask for customer service.
	Driving force is too low	<input type="checkbox"/> Compare the actuating data of the type plate to the operating data of the system – in case of deviation inform the supplier / manufacturer
3. Stem does not travel across the whole travel area (0 to 100% travel)	Foreign matter in valve seat, damaged interior parts	<input type="checkbox"/> Dismantle fitting and send in or ask for customer service.
4. Leakage of valve seat excessive	Foreign matter in valve seat, damaged interior parts	<input type="checkbox"/> Dismantle fitting and send in or ask for customer service.
	Cone does not lock properly, possibly due to foreign substance in valve seat	<input type="checkbox"/> Dismantle fitting and send in or ask for customer service. Check working order of drive, see operating instructions
5. Leakage of stem seal	Stem sealing is worn	<input type="checkbox"/> Replace stem seal
	Stem is soiled	<input type="checkbox"/> Clean stem using suitable detergent
	Stem is damaged	<input type="checkbox"/> Dismantle fitting and send in or ask for customer service.

table 3 Check list breakdown